



AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A lithographic apparatus comprising:
an illumination system configured to condition ~~for providing a projection beam~~
of radiation;
a support structure configured to support a ~~for supporting~~ patterning structure,
the patterning structure configured ~~serving to~~ impart the ~~projection beam~~ with a
pattern in its cross-section;
a substrate table configured to hold ~~for holding~~ a substrate;
a projection system configured to project ~~for projecting~~ the patterned beam
onto a target portion of the substrate;
at least one pupil shaping element constructed and arranged to define an on-
axis, substantially rectilinear intensity distribution on the ~~projection beam~~ at a pupil
plane of the illumination system; and
a polarizer constructed and arranged to impart a linear polarization to the
~~projection beam~~.
2. (Original) Apparatus according to claim 1 wherein said intensity
distribution is a rectangle having an aspect ratio not equal to 1, and the longer
dimension of the rectangle is parallel to the X or Y axis of the apparatus.
3. (Original) Apparatus according to claim 2 wherein said linear
polarization is substantially parallel to the longer dimension of the rectangle.
4. (Withdrawn) Apparatus according to claim 1 wherein said intensity
distribution is a square.
5. (Withdrawn) Apparatus according to claim 3 wherein said intensity
distribution is oriented such that the sides of the square are parallel to X and Y axes.

6. (Withdrawn) Apparatus according to claim 3 wherein said intensity distribution is oriented such that the diagonals of the square are parallel to X and Y axes.

7. (Withdrawn) Apparatus according to claim 1 wherein said intensity distribution is cross-shaped.

8. (Withdrawn) Apparatus according to claim ~~7~~3 wherein said intensity distribution is oriented such that the arms of the cross are aligned with X and Y axes of the apparatus.

9. (Original) Apparatus according to claim 1 wherein the center of said intensity distribution lies on the optical axis of the illumination system.

10. (Original) Apparatus according to claim 1 further comprising a phase-shift mask as said patterning structure.

11. (Withdrawn) Apparatus according to claim 1 wherein the rectilinear intensity distribution has at least two elongate poles located off-axis, and the direction of polarization is substantially parallel to the long direction of the poles.

12. (Withdrawn) Apparatus according to claim 11 wherein said rectilinear intensity distribution has four elongate poles, two of which are oriented along a first direction and two of which are oriented along a second direction substantially orthogonal to the first direction, the direction of polarization of the radiation in each pole being substantially parallel to the long direction of that pole.

13. (Withdrawn) Apparatus according to claim 11, wherein said at least one pupil shaping optical element comprises a diffractive optical element configured to generate ~~for generating~~ a dipole or a quadrupole angular intensity distribution which is rotatable around an axis substantially parallel to an optical axis of the illumination ~~radiation~~ system and further comprises a rod-type optical integrator.

14. (Currently Amended) Apparatus according to claim 1 wherein said at least one pupil shaping optical-element comprises a set of moveable blades.

15. (Currently Amended) Apparatus according to claim 1 wherein said at least one pupil shaping optical-element comprises a diaphragm having an aperture or apertures corresponding to said intensity distribution.

16. (Previously Presented) Apparatus according to claim 15 wherein said polarizer comprises a polarizer mounted in the or each aperture of said diaphragm.

17. (Currently Amended) Apparatus according to claim 1 wherein said illumination system polarizer comprises a radiation source that emits a linearly polarized beam.

18. (Currently Amended) A lithographic projection apparatus comprising:
an illumination system configured to condition ~~for providing~~ a ~~projection beam~~ of radiation;
a support structure configured to support a ~~for supporting~~ patterning structure, the patterning structure configured ~~serving to~~ impart the ~~projection beam~~ with a pattern in its cross-section;
a substrate table configured to hold ~~for holding~~ a substrate;
a projection system configured to project ~~for projecting~~ the patterned beam onto a target portion of the substrate;
at least one pupil shaping element constructed and arranged to impart an intensity distribution that is not symmetric in an interchange of two orthogonal axes at a pupil plane of the illumination system; and
a polarizer configured to impart ~~for imparting~~ a linear polarization to the ~~projection beam~~.

19. (Currently Amended) A device manufacturing method comprising:
~~projecting a patterned beam of radiation onto a target portion of a substrate;~~

processing a beam of radiation such that an intensity distribution of the patterned beam comprising an on-axis rectilinear intensity distribution at a pupil plane of an illumination system of a lithographic apparatus comprises an on-axis rectilinear intensity distribution; and

linearly polarizing said projection beam; and

projecting the beam of radiation imparted with a pattern onto a target portion of a substrate.

20. (Previously Presented) A method according to claim 19 wherein in said linearly polarizing, the direction of the linear polarization imparted to the beam is substantially parallel to lines of said pattern.

21. (New) A method according to claim 19 wherein said intensity distribution of the beam at the pupil plane is a rectangle having an aspect ratio not equal to 1, and the longer dimension of the rectangle is parallel to the X or Y axis of the lithographic apparatus and wherein in said linearly polarizing, the direction of the linear polarization imparted to the beam is substantially parallel to the longer dimension of the rectangle of the intensity distribution.

22. (New) Apparatus according to claim 18, wherein the linear polarization is substantially parallel to one of the two orthogonal axes along which a dimension of the intensity distribution is greatest.

23. (New) Apparatus according to claim 18 wherein said intensity distribution is a rectangle having an aspect ratio not equal to 1, and the longer dimension of the rectangle is parallel to the X or Y axis of the apparatus.

24. (New) Apparatus according to claim 23 wherein said linear polarization is substantially parallel to the longer dimension of the rectangle.